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10/810,623	03/29/2004	William A. Blair	790094.402	9843

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EXAMINER	
SYED, NABIL H	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/810,623	BLAIR ET AL.	
	Examiner	Art Unit	
	/NABIL H. SYED/	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *40-42,44-46,50,51,59 and 62-71* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *40-42,44-46,50,51,59 and 62-71* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a final office action on merits in response to the amendments filed 12/02/09. Amendments received on 12/02/09 have been entered. Claims 40-42, 44-46, 50, 51, 59 and 62-71 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 40, 44-46, 50-51, 62, 65 and 68-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blair (6,026,818) in view of Marsh et la. (6,909,366).

As of claims 40, 44, 45, 62, 65 and 68-70 Blair discloses an apparatus to detect surgical objects in a work area, the surgical objects marked by respective resonant tag elements that produce narrowband return signals in response to energization, the detection apparatus comprising (see abstract), the apparatus comprising:
a first electronic circuit coupled to a transmit/receive antenna and adapted to emit a varying wideband interrogation signal (Blair discloses that a detector device (see fig. 10) is used to excite the tag with signals over a wide bandwidth, hence comprising a first

electronic circuit; see col. 5, lines 65-67; also see fig. 3. Blair further discloses that the pulse signal frequency is move around in random fashion, hence varying the frequency of the interrogation signal; see col. 8, lines 11-19), the wideband interrogation signal having a plurality of pulses adapted to additively build energy in said tag element to enable tag element to generate at least one un-modulated return signal that is an image of a resonance decay of additively built energy of said tag element (Blair discloses that the pulsed transmissions allow the system to pump more energy into the tag through several pulses, and the tag when excited transmits an image signal of its resonance decay, via magnetic coupling back to the detection wand which contains a receiver circuit (see col. 6, lines 3-10). Blair further discloses that the tag transmit a narrow return signal (un-modulated return signal), Blair also discloses that the tuned transmitter of the interrogator builds additive energy into the tag (see col. 6, lines 53-55); and a second electronic circuit coupled to transmit/receive antenna of the handheld wand and configured to determine from a receipt of any of the narrowband return signals whether any of the resonant tag elements are present in the work area (Blair discloses that the receiver is also wideband whereby it can see tags over a wide spectrum benefiting from fast transmitter signal decay; see col. 6, lines 56-58. Blair further discloses that the system uses a half duplex system, so transmitter transmits a signal and after the transmission of the pulse is finished the detection wand is switched to the receiving mode; see col. 7, lines 12-24; also see col. 5, lines 1-20). Blair further discloses that during a transmit portion of respective transmit and receive cycles and to cause the transmit/receive antenna elements to not emit any interrogation signals

during any of the receive portions of the transmit and receive cycles (Blair discloses that in normal operation the transmitter, while it is exciting the tag, is blocking any possible return signal from the tag, that is the system is in effect half duplex (see col. 7, lines 13-15. It is inherent in half duplex system that only one party transmits at a time. So when the tag transmits a reply signal the interrogator's transmitter will be turned off. Blair further discloses that when the transmitter is one, the tag will be excited and will also radiate a return signal. at the time the transmitter is turned off the tag is at its peak amplitude of radiated signal (see col. 7, lines 17-20), suggesting that interrogator's transmitter do not emit any interrogation signals during any of the receive portions cycles (see col. 5, lines 5-20).

However Blair fails to disclose that interrogation transmits a varying interrogation signal in round-robin succession and wherein a number of transmit and receive cycles of each of the transmit/receive antenna elements are clocked so as to avoid and overlap with a number of transmit and receives cycles of the others ones of the transmit/receives antenna elements.

Marsh discloses a multi-dimensional identification of articles, wherein an interrogator (via interrogator 10) comprises three mutually orthogonal transmit/receive antenna elements arranged to individually transmit in respective coordinate directions and to receive return signals (Marsh discloses that antenna elements 12, 16 and 14 transmit and receive signals in different orientation (x, y, z; see fig. 1; also see col. 7, lines 6-11). Marsh further discloses that the transmit antenna 12B and receive antenna 12C are in one orientation and polarization (for example X), and transmit antenna 14B

and receive antenna 14C are in other orientation and polarization (for example y), and transmit antenna 16B and receive antenna 16C are in a different orientation than antenna 12 and 14 (for example z). Marsh further discloses that the interrogator cycles through the transmitting antennas and receiving antennas, so at any one moment, matching transmitting and receiving antennas are operative to transmit and receive similarly polarized signals (see col. 10, lines 12-20). Since Marsh discloses that antenna elements 12, 14 and 16 transmit in succession, for example, only one of the three antenna element is transmitting at any one time (see col. 6, lines 1-6) Marsh discloses that interrogator is 10 is transmitting in the round robin scheme (As disclosed in the specification of the present application (Para [0062] of US publication 2004/0250819), in the round robin scheme, the three rings 13, 14, 15 transmit in succession such that only one of the three rings 13, 14 and 15 is transmitting at any one time). Further as disclosed, the interrogation signal is transmitted in different orientation, the interrogator 10 is transmitting a varying interrogation signal, since the orientation of the interrogation signal is being varied.

From the teaching of Marsh it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Blair to include a interrogator which transmits a varying interrogation signal in a round robin scheme as taught by Marsh in order to cover all possible orientation and locations of the tagged objects within the area to be interrogated (see col. 2, lines 24-30). The Examiner would further like to point out that the reference of Marsh is used to indicate that using three mutually orthogonal transmit/receive antenna elements are well know in the art to cover

a larger interrogation area, so using the three mutually orthogonal rings on the handheld interrogator of Blair would yield a same predictable results.

As of claims 46, Blair discloses that at least one return signal includes a relatively narrowband return signal centered about a specific, but not predetermined frequency (see col. 11, lines 3-10).

As of claims 50, Blair discloses that second electronic circuit includes a digital signal processor (DSP) adapted to filter at least one return signal from noise (via DSP 62; see fig. 6 and 3; also see col. 6, lines 64-67).

As of claims 51, Blair discloses that first and second electronic circuits and said transmit/receive antenna are part of a hand-held scanning device adapted to detect said object having said tag element affixed thereto in said work area, including a surgical area internal to a patient (see col. 5, lines 43-54).

4. Claims 41 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blair (6,026,818) in view of Marsh el al. (6,909,366) and further in view of Pauly et al. (6,349,234).

As of claims 41 and 66, Blair discloses all the limitation of the claimed invention as mentioned in claims 40 above but fails to explicitly disclose that interrogator transmits a pulse-width interrogation signal.

Pauly discloses a tag (via pacer 106) and an interrogator (via programmer 110) (see fig. 1). Pauly discloses that various communications technique such as pulse-width modulation (PWM), frequency shift keying (FSK) or other suitable techniques can be used (see fig. 2 and fig. 3; also see col. 6, lines 31-45)

From the teaching of Pauly it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the interrogator of Blair to include the function of producing pulse width modulation signal as taught by Pauly since pulse width modulation is a common technique to convey information over a communications channel.

5. Claims 42 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blair (6,026,818) in view of Marsh et al. (6,909, 366) and further in view of Lewiner et al. (4,893,118).

As of claims 42 and d67, Blair discloses all the limitation of the claimed invention as mentioned in claims 40 above but fails to explicitly disclose that interrogator transmits a voltage varying interrogation signal.

Lewiner discloses an interrogator, which produces a voltage-modulated signal (see claim 1).

From the teaching of Lewiner it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the interrogator of Blair to include the function of producing a voltage modulated signal as taught by Lewiner since it is well know in the art that the interrogators are used to transmit an energy signal to power the passive tags.

6. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blair (6,026,818) in view of Marsh et al. (6,909,366) and further in view Silivan (4,681,111).

As of claim 59, the combination of Blair and Marsh discloses all the limitation of the claimed invention as mentioned in claim 40 above but fails to explicitly disclose that the second electronic circuit (inside the interrogator) includes a Bessel low pass filter.

Silivan discloses that an interrogator (via external device 1; see fig. 1) can include a low pass filter, such as a Bessel filter 32 (see fig. 5).

From the teaching of Silivan it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combination of Blair and Marsh to include a Bessel filter in the interrogator as taught by Silivan in order to preserve the wave shape of filtered signals in the pass band, and further smooth the signal. The reference of Silivan is used to indicate that using Bessel filter in a receiver is well know in the art to remove all frequencies but the range of frequencies desired, so using Bessel filter in the system of Blair would yield a same predictable results of filtering the desired frequencies. So the proposed modification of Blair would not change the principal operation of the reference of Blair.

7. Claims 63, 64 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blair (6,026,818) in view of Marsh et al. (6,909,366) and further in view of Nysen (6,633,226).

As of claims, 63, 64 and 71, the combination of Blair and Marsh discloses all the limitations of the claimed invention as mentioned in claims 40 and 62 above, but fails to explicitly disclose that the frequency is randomly varied by alteration of a time interval between successive drive pulses and interrogation signal is varied so as to increase a signal to noise ration.

Nysen discloses a frequency hopping spread spectrum system for interrogating a passive transponder (see abstract). Nysen discloses that the frequency of the interrogation signal is randomly varied (see col. 11, lines 18-20; also see col. 15, lines 25-39). Nysen further discloses that the interrogation signal is pulsatile, having between 25%-50% duty cycle. For example, with a frequency hopping period of 15 micro seconds, the system generates an interrogation pulse for 7.5 micro second, is silent for 300 ns and then listen for 4 micro second for return signal and then silent for 3.5 micro second, hence altering the time interval between drive pulses (see col. 12, lines 9-22). Nysen further discloses that by sweeping the frequency between different values the interrogation system provides higher signal to noise ratio (see col. 3, lines 28-40; also see col. 4, lines 9-14). Further note, that in a communication system it is well know that, varying the frequency between different values will increase signal to noise ration, because vary frequency will reduce, random noise, fixed frequency interference from near by sources.

From the teaching of Nysen it would have been obvious to one having ordinary Marsh to include the step vary the interrogation signal by altering time as taught by Nysen in order to eliminate echo from near filed sources and other interrogation systems.

Response to Arguments

8. Applicant's arguments with respect to all the claims filed 12/02/09 have been fully considered but they are not persuasive.

As per applicant arguments, "that there is no motivation or suggestion to make the proposed modification, and/or the proposed modification would change the principle of operation of Blair and so the teachings of the references are not sufficient to render claim 4 prima facie obvious." The Examiner respectfully disagrees. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The Examiner would further like to point out that if the applicant's reasoning is correct, and then there could never be a proper obviousness rejection.

As of claim 40, it would have been obvious to modify Blair to include a interrogator which transmits a varying interrogation signal in a round robin scheme as taught by Marsh in order to cover all possible orientation and locations of the tagged objects within the area to be interrogated (see col. 2, lines 24-30). The Examiner would further like to point out that the reference of Marsh is used to indicate that using three mutually orthogonal transmit/receive antenna elements are well know in the art to cover a larger interrogation area, so using the three mutually orthogonal rings on the handheld interrogator of Blair would yield a same predictable results. Further as in Blair (see col. 3, lines 48-62), after surgery scanning the site of the object with interrogator with multiple antenna elements as taught in Marsh would help to tracked the tagged objects,

because the tagged objects can be placed in the body in any manner and still be able to receive interrogation signals. Further modifying Blair by including teachings of Mars would not render the prior art invention being modified unsatisfactory for its intended purpose, because the detection wand with multiple antenna elements will still be able to be used for detection of the presence of objects and particularly suitable for use in detection of objects such as surgical sponges which may have been left behind during surgery (see col. 3, lines 16-20). Further in the reference of Blair the tags do not have to have three orthogonal tank windings. Blair discloses that the tags can have single loop as seen in figs. 1 and 2. So if a single loop tag is used in an interrogation system, the interrogator with multiple loops as taught by combination of Blair and Marsh would reduce the orientation and location problem.

As of claim 41, the reference of Blair discloses that a detector device (see fig. 10) emits a pulsed wideband signal (see col. 3, lines 47-52). The Examiner is using the reference of Pauly to teach that an interrogator can use different modulation techniques for communication channels. Pauly discloses that the communication channel may use pulse-width modulation, frequency shift keying. Further as disclosed above the reference of Blair discloses that the interrogator uses pulsed interrogation signals to communicate with tags, so it would have been obvious to one having ordinary skill in the art at the time the invention was made to use different pulse modulation scheme, such as pulse width as taught by Pauly to effect the communication between the interrogator and tag. The Examiner would further like to point out that the reference of Pauly is used to indicate that using pulse width modulation in a communication system is well know in

the art to convey information in a communication channel, so using pulse width modulation in the system of Blair would yield a same predictable results of conveying information between an interrogator and a tag. Further using pulse width modulation in Blair would not render Blair inoperative, because using pulse width modulation in Blair would yield a predictable results of a signal emitting detection device comprising pulsed signal emitting means which cover a signal range which includes that of the tag (see Blair, col. 5, lines 5-8). Further pulse width modulation can be used in a same manner in the RF as used in optical, because both techniques are used in communication systems, and it is well known in the art that the pulse width modulation is used in an RF communication system, as well optical communication system to transfer data from among multiple devices. Further both of the references deals with detecting objects inside a human body.

As of claim 42, Lewiner discloses an interrogator, which produces a voltage-modulated signal (see claim 1). The reference of Lewiner is used to indicate that using voltage modulation in a communication system is well know in the art to convey information in a communication channel, so using voltage modulation in the system of Blair would yield a same predictable results of conveying information between an interrogator and a tag. So the proposed modification of Blair would not change the principal operation of the reference of Blair. Further using voltage varying wideband interrogation signal in Blair would not render Blair inoperative, because using voltage varying wideband interrogation signal in Blair would yield a predictable results of a signal emitting detection device suitable for detection of the presence of objects, without making the

modified device inoperable (see Blair, col. 3, lines 17-23). Further using voltage varying wideband interrogation signal in Blair would provide a reasonable expectation of success (see MPEP 2143.02 II), because modifying Blair to include voltage varying interrogation signal, would enable the interrogator to identify object at short distance and provide an energy signal to power the tags. Further using voltage varying interrogation signal in the reference of Blair and Lewiner would provide the same effect of providing power to the tags using the interrogation signal.

As of claims 63 and 64, Blair discloses that pulse signal frequency is move around in a random fashion to make it difficult for continuous wave noise to affect the system, since it will become very out of phase with the tag resonance. This is similar to a spread spectrum approach in frequency hopping. So the reference of Blair suggests that a frequency hopping technique can be used in the system of Blair. The Examiner is using the reference of Nysen to further elaborate that in the frequency hopping spread spectrum system the frequency of the interrogation signal is randomly varied (see col. 11, lines 18-20; also see col. 15, lines 25-39). Nysen further discloses that the interrogation signal is pulsatile, having between 25%-50% duty cycle. For example, with a frequency hopping period of 15 micro seconds, the system generates an interrogation pulse for 7.5 micro second, is silent for 300 ns and then listen for 4 micro second for return signal and then silent for 3.5 micro second, hence altering the time interval between drive pulses (see col. 12, lines 9-22). Nysen further discloses that by sweeping the frequency between different values the interrogation system provides higher signal to noise ratio (see col. 3, lines 28-40; also see col. 4, lines 9-14). Further note, that in a

communication system it is well know that, varying the frequency between different values will increase signal to noise ration, because vary frequency will reduce, random noise, fixed frequency interference from near by sources. So using the frequency hopping spread spectrum technique as taught by Nysen in Blair would not change the principal operation of Blair, so the Examiner believes that the 103 rejection based on Blair and Nysen is proper. So it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the teachings of Nysen regarding varying the frequency, in the reference of Blair would yield a predictable result of an interroagtor interrogating tags using the frequency hopping spread spectrum technique. Further using the frequency hopping in an RF system or an acoustic system would have the advantage of reducing interference.

Applicant's arguments with respect to claims 59, 63 and 64 have been considered but they are not persuasive, the Examiner maintains the rejection made in the previous action. It is still the Examiner's position that the combination of the prior art made in the rejection is proper and would have been obvious to one having ordinary skill in the art. Further note that reasoning given in claims 40-42 also applies to claims 59, 63 and 64.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to /NABIL H. SYED/ whose telephone number is (571)270-3028. The examiner can normally be reached on M-F 7:30-5:00 alt Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Zimmerman can be reached on (571)272-3059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/NABIL H SYED/
Examiner
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